

A6  
cont'd

3 conductive power plane and said plated through hole filled with said dielectric  
4 material.

A7

1 38. (Amended) An electronic device package as recited in claim  
2 48 wherein the thickness of said non-conductive layer is between 0.5 mils and 5  
3 mils.

A8

1 48. (Newly added) An electronic device package comprising:  
2 a substrate comprising impregnated glass fibers;  
3 an electrically conductive circuit; and  
4 a non-conductive layer comprising a dielectric material free of  
5 continuous glass fibers applied to said substrate such that said non-conductive  
6 layer lies between said substrate and said electrically conductive circuit to  
7 prevent shorts there between caused by migration of said electrically conductive  
8 circuit along said glass fibers.

#### REMARKS

After filing a response to a restriction requirement, Applicants determined that certain of the pending claims should be amended to make more clear the present invention and that Figure 3 should be amended to illustrate a certain feature specified in the claims that was not previously illustrated. Accordingly, claim 9 has been replaced by claim 48, claims 8, 10 through 17, 19 through 23, 32, 35 and 38 have been amended, and Figure 3 has been amended. The description of the invention also has been amended to include a reference numeral corresponding to the amendment made to Figure 3.

Previously, in response to the restriction requirement stated in the Office Action mailed on March 9, 2001, Applicants responded as follows.

"The applicants have been required, under 35 U.S.C. § 121, to elect for further prosecution the claims of Group I ("Claims 1-8, 9-35, 36-37, 38, 39, 40-41, 46-47, drawn to a printed circuit board") or Group

II ("Claims 42-45, drawn to a method of making a printed circuit board"). The Applicants hereby elect for further prosecution the Group I claims, namely claims 1 through 41, 46, and 47. A divisional application may later be filed to prosecute the Group II claims, namely claims 42 through 45. This election is made without traverse."

The foregoing restriction election is modified by removing claim 9 which has been cancelled and including claim 48 which has been substituted for claim 9.

Previously, in response to the election of species requirement stated in the Office Action mailed on March 9, 2001, Applicants responded as follows.

"In response to the requirement to elect a species, Applicants elect claims 1 through 10, 12 through 15, 19 through 23, 25, 26, 29 through 38, 40, and 41 which read on Figure 4 and a number of which are generic to the embodiments illustrated by Figures 3, 4, 5, and 6.

Figure 6 has not been identified by the Examiner as a distinct embodiment. As indicated at page 7, lines 29 et seq. of Applicants' specification, Figure 6 is generally similar to Figure 4. Figure 6 includes all of the elements of Figure 4 and is considered by Applicants to be the same embodiment as Figure 4. If the Examiner agrees, claims 27, 28, 46, and 47 should be added to the claim group of the species elected above.

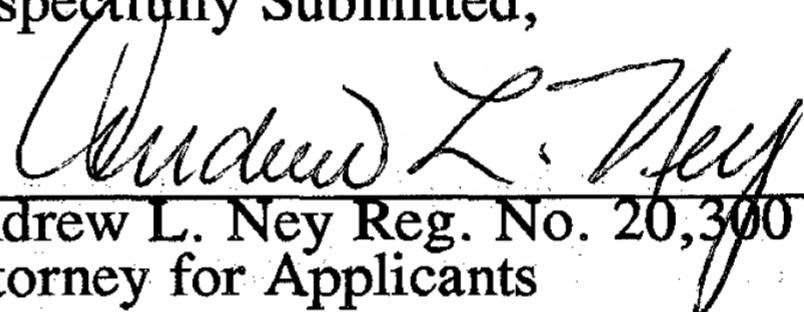
The Examiner is invited to call the Applicants' undersigned attorney if any further explanation will expedite the prosecution of the application, or if the Examiner has any suggestions or questions concerning the application or the present response."

The foregoing species election is changed as follows due to the amendments of certain of the claims. Applicants elect claims 1 through 8, 10, 12 through 15, 19 through 23, 31, and 37 through 39 which read on Figure 4. A number of these claims are generic to the embodiments illustrated by Figures 3, 4, 5, and 6.

As noted previously, Figure 6 has not been identified by the Examiner as a distinct embodiment. As indicated at page 7, lines 29 et seq. of Applicants' specification, Figure 6 is generally similar to Figure 4. Figure 6 includes all of the elements of Figure 4 and is considered by Applicants to be the same embodiment as Figure 4. If the Examiner agrees, claims 16 through 18, 24 through 30, 46, and 47 should be added to the claim group of the species elected above.

Again, the Examiner is invited to call the Applicants' undersigned attorney if any further explanation will expedite the prosecution of the application, or if the Examiner has any suggestions or questions concerning the application or the present Response.

Respectfully Submitted,

  
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May 30, 2001  
Patricia C. Boccella

VERSION WITH MARKINGS SHOWING CHANGES MADESPECIFICATION:

Specification at page 6, line 19.

Print circuit board 133 includes one or more plated through holes 124. The process of making plated through holes and circuitry is well known and not described here. Non-conductive layers 156, 158 insulate power planes 134, 152 from each other and from plated through hole 124 and from the glass fibers contained within substrates 114, 160. In this manner, shorts caused by electrochemical migration of conductive material between power planes 134, 152 and plated through hole 124 along glass fibers contained within substrates 114, 160, as described in connection with Figure 2, can be eliminated. Plated through hole 124 includes a conductive pad 162 formed on a first surface 120 of substrate 114. It will be appreciated that other electrically conductive circuitry 121 may be formed on surface 120.

CLAIMS:

Cancel claim 9, amend claims 8, 10 through 17, 19 through 23, 32, 35 and 38, and add claim 48.

1           8. (Amended) The printed circuit board as recited in claim 12,  
2 further comprising at least one clearance between said electrically conductive  
3 circuitry and said plated through hole filled with said dielectric material.

1           10. (Amended) The electronic device package as recited in  
2 claim 948 further comprising at least one power plane.

1           11. (Amended) The electronic device package as recited in  
2 claim 1048 further including a second substrate comprising impregnated glass  
3 fibers, a power plane and a second non-conductive layer positioned between said  
4 circuitrysecond substrate and said power plane.

1           12. (Amended) The electronic device package as recited in  
2 claim 10 further comprising at least one plated through hole extending through  
3 ~~each~~ said substrate and ~~each~~ said non-conductive layer.

1           13. (Amended) The electronic device package as recited in  
2 claim 12 wherein said ~~non-conductive layer is positioned between said through~~  
3 ~~hole and said power plane is spaced from said through hole and said electronic~~  
4 ~~device package further includes a non-conductive layer comprising a dielectric~~  
5 ~~material free of continuous glass fibers in the space between said power plane~~  
6 ~~and said through hole to prevent a short there between caused by migration of~~  
7 ~~said conductive material along said glass fibers.~~

1           14. (Amended) The electronic device package as recited in  
2 claim 12 wherein said non-conductive layer is positioned between said through  
3 hole and said ~~circuitry~~ electrically conductive circuit.

1           15. (Amended) The electronic device package as recited in  
2 claim 948, further comprising at least one clearance filled with said dielectric  
3 material.

1           16. (Amended) The electronic device package as recited in  
2 claim 948 further including ~~an~~ wherein said electronic device is electrically  
3 coupled to said ~~circuitry~~ electrically conductive circuit.

1           17. (Amended) The electronic device package as recited in  
2 claim 948-wherein said ~~circuitry~~ electrically conductive circuit includes a  
3 plurality of solder pads.

1           19. (Amended) The electronic device package as recited in  
2 claim 948 wherein said dielectric material comprises a photoimageable dielectric  
3 material.

1           20. (Amended) The electronic device package as recited in  
2 claim 948 wherein said dielectric material comprises polyimide.

1               21. (Amended) The electronic device package as recited in  
2 claim 948 wherein said dielectric material comprises Kevlar-based paper  
3 impregnated with epoxy resin.

1               22. (Amended) The electronic device package as recited in  
2 claim 948 wherein said dielectric material comprises resin-coated copper foil.

1               23. (Amended) The electronic package device as recited in  
2 claim 948 wherein said substrate layer is prepreg comprising glass fabric  
3 impregnated with epoxy resin.

1               32. (Amended) The electronic device package as recited in  
2 claim 31 further including additional non-conductive layers ~~is~~-positioned  
3 between said substrates and said power planes.

1               35. (Amended) The electronic device package as recited in  
2 claim 32 further comprising at least one clearance between said electrically  
3 conductive power plane and said plated through hole filled with said dielectric  
4 material.

1               38. (Amended) An electronic device package as recited in claim  
2 948 wherein the thickness of said non-conductive layer is between 0.5 mils and  
3 5 mils.

1               48. (Newly added) An electronic device package comprising:

2               a substrate comprising impregnated glass fibers;

3               an electrically conductive circuit; and

4               a non-conductive layer comprising a dielectric material free of  
5 continuous glass fibers applied to said substrate such that said non-conductive  
6 layer lies between said substrate and said electrically conductive circuit to  
7 prevent shorts there between caused by migration of said electrically conductive  
8 circuit along said glass fibers.